The potential of physically acting bioinsecticides for the control of two key pests of oilseed rape.

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Oilseed rape in the UK

☑ Grown commercially for:

Oil-rich seeds → edible oil, biodiesel, and animal feed.

Agronomic benefits → break crop in cereal rotations.

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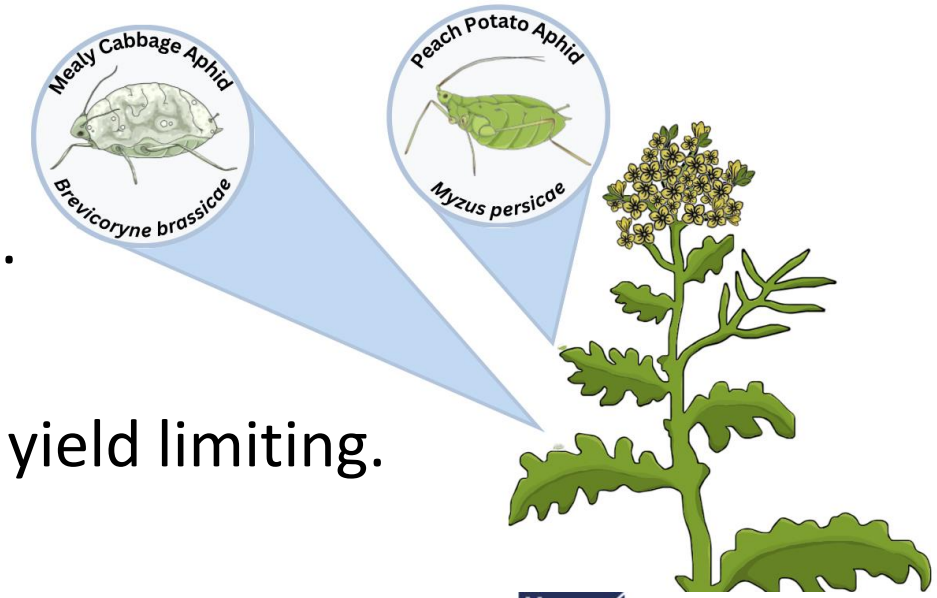
☒ Annual market value of oilseed rape is volatile.

☒ Susceptible to numerous pests and diseases – yield limiting.



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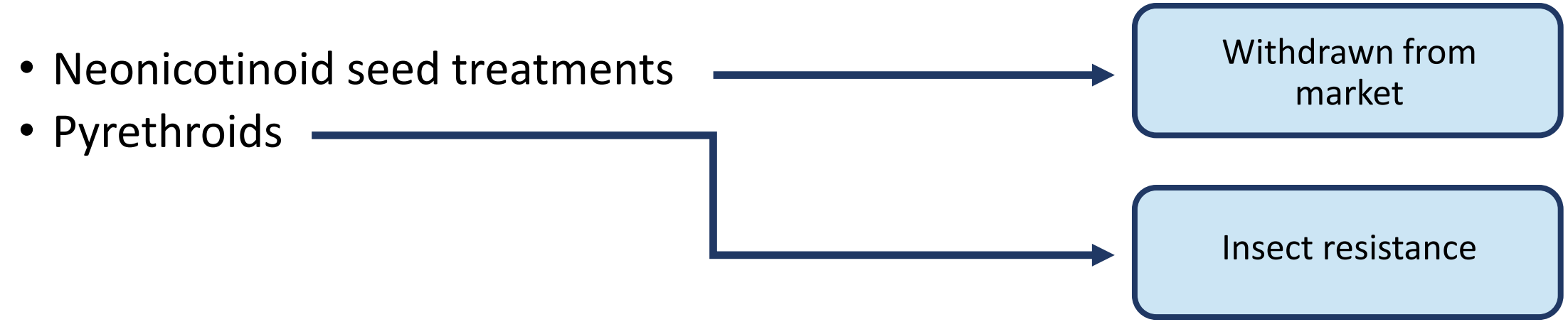
The problem

- Historically pests and diseases controlled by synthetic chemical pesticides.



- Reduced efficacy of available controls.

Potential Solution - Bioinsecticides

- Mass produced agents originating from natural sources for the control of plant pests.[1]

☑ Naturally derived → ☑ Less susceptible to resistance

☑ Perceived increased environmental & human safety

☑ Compatible with IPM programmes

Example: protected horticulture

[1]Chandler D., *et al*. (2011) The development, regulation and use of biopesticides for integrated pest management. *Philosophical Transactions of the Royal Society B: Biological Sciences*, **366**.
[2]Lowenberg-deboer J., Pope T.W., Roberts J.M. (2020) The Economic Feasibility of Autonomous Equipment for Biopesticide Application, In *INFER Symposium on Agri-Tech Economics for Sustainable Futures*.

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Potential Solution - Bioinsecticides

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☒ Expensive: £100 - £300 p/ha[2]

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☒ Poor residual effects

☒ High water requirements: 1500 L/ha[2]

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Example: protected horticulture

☒ Environmental sensitivity

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Potential Solution - Bioinsecticides

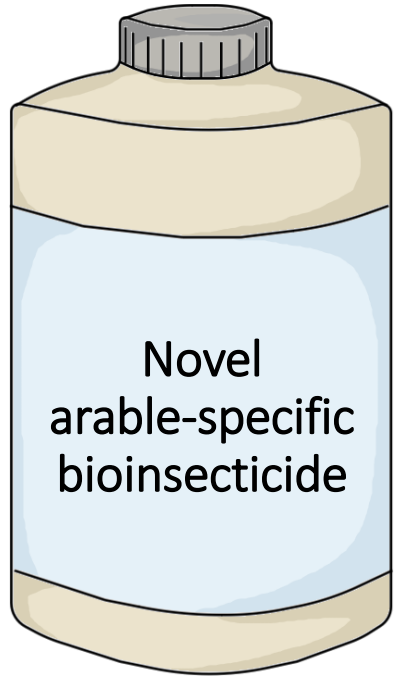
- Why don’t we develop a new bioinsecticide product?

☒ Expensive: £100 - £300 p/ha[3]

☒ Poor residual effects

☒ High water requirements: 1500 L/ha[3]

☒ Environmental sensitivity



Registering a new plant protection product is a very expensive and long process.

Millions £

Often 10+ years

[3]Lowenberg-deboer J., Pope T.W., Roberts J.M. (2020) The Economic Feasibility of Autonomous Equipment for Biopesticide Application, In *INFER Symposium on Agri-Tech Economics for Sustainable Futures.*

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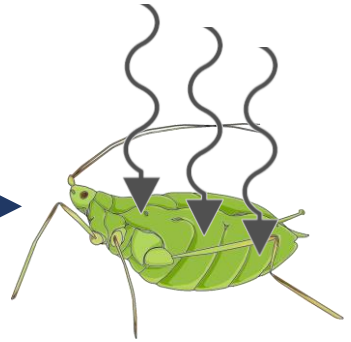
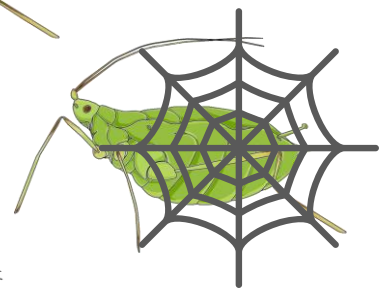
Screening commercially available Bioinsecticides

- Efficacy of 3 commercially available products for the control of OSR pests.

Product		Constituents
FLiPPER (Bayer)	1	Unsaturated carboxylic acids
ProTAC SF (Biobest)	2	Silicon polymers
Fizimite (Russell IPM)	3	Sodium laurel ether sulphate





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Screening commercially available Bioinsecticides

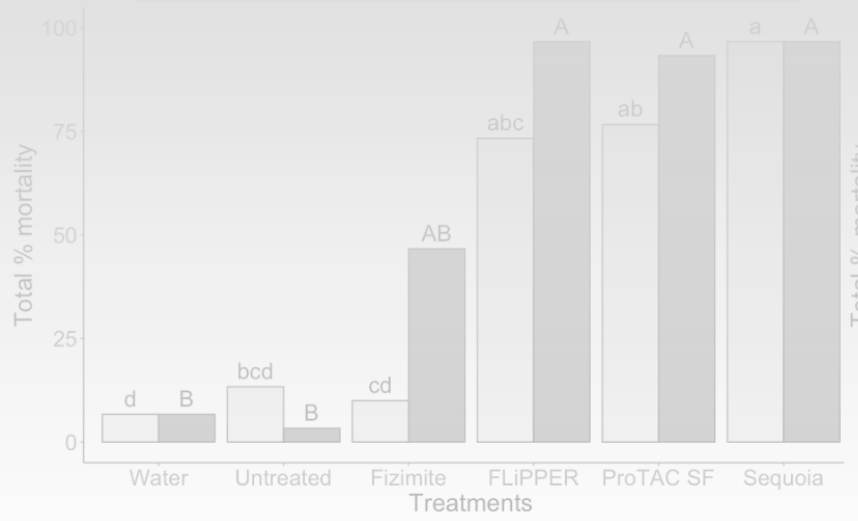
Is mortality of peach-potato aphid (*M. persicae*) and mealy cabbage aphid (*B. brassicae*) achieved after 3 days when the product is applied at recommended label rate when:

1. Applied to both the aphid and the localised area? (combined)
2. When applied to only the aphid? (direct contact)
3. When applied to only the localised area? (residual contact)

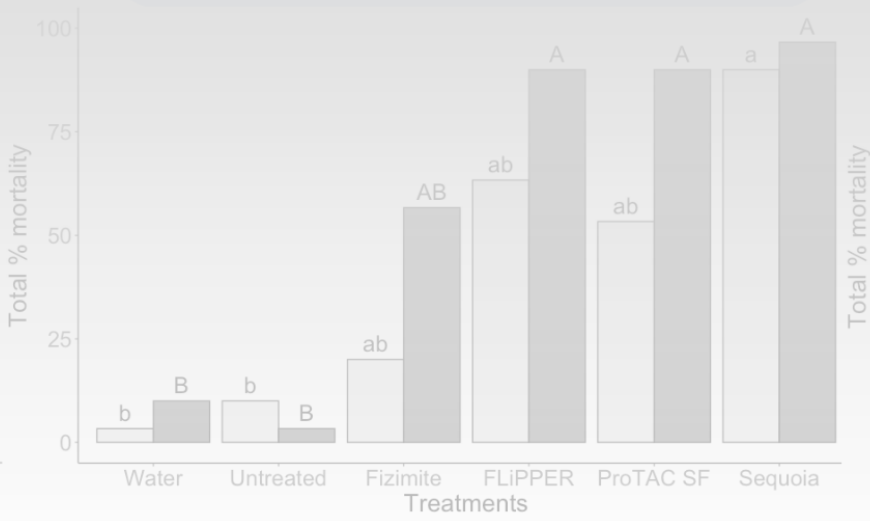
Results

… Stop by my poster to find out more!

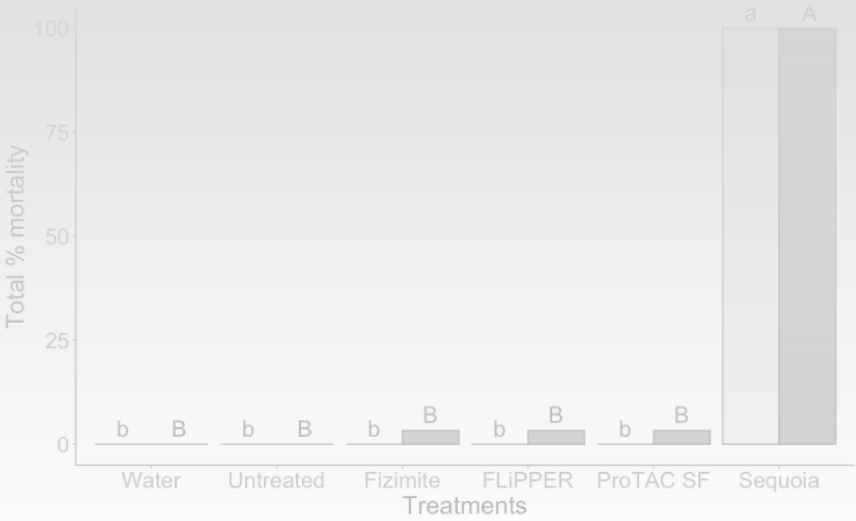
1. Combined Application (aphid & leaf)



2. Aphid Only Application (direct contact)



3. Leaf Only Application (residual effects)



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